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Current Trends

Classification System for Human Immunodeficiency Virus (HIV) Infection in Children Under 13 Years of Age

INTRODUCTION

With the identification of the causative agent of the acquired immunodeficiency syndrome (AIDS), a broad spectrum of clinical manifestations has been attributed to infection with the human immunodeficiency virus (HIV). With the exception of the CDC surveillance definition for AIDS (*1,2*), no standard definitions for other manifestations of HIV infection have been developed for children. Classification systems published to date have been developed primarily to categorize clinical presentations in adult patients and may not be entirely applicable to infants and children (*3-5*).

Physicians from institutions caring for relatively large numbers of HIV-infected children report that only about half of their patients with symptomatic illness related to the infection fulfill the criteria of the CDC surveillance definition for AIDS (*6,7*).

To develop a classification system for HIV infection in children, CDC convened a panel of consultants* consisting of clinicians experienced in the diagnosis and management of children with HIV infection; public health physicians; representatives from the American Academy of Pediatrics, the Council of State and Territorial Epidemiologists, the Association for Maternal Child Health and Crippled Children's Programs, the National Institute on Drug Abuse/Alcohol, Drug Abuse and Mental Health Administration, the National Institute of Allergy and Infectious Diseases/National Institutes of Health, and the Division of Maternal and Child Health/Health Resources and Services Administration; and CDC.

GOALS AND OBJECTIVES OF THE CLASSIFICATION SYSTEM

The system was designed primarily for public health purposes, including epidemiologic studies, disease surveillance, prevention programs, and health-care planning and policy. The panel attempted to devise a simple scheme that could be subdivided as needed for different purposes.

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DEFINITION OF HIV INFECTION IN CHILDREN (Table 1)

Ideally, HIV infection in children is identified by the presence of the virus in blood or tissues, confirmed by culture or other laboratory detection methods. However, current tests—including culture—for detecting the virus or its antigens are not standardized and are not readily available. Detection of specific antibody to the virus is a sensitive and specific indicator of HIV infection in adults, since the majority of adults with antibody have had culture evidence of infection (*8-10*). Similar studies involving children have not been reported. Also, the presence of passively transferred maternal antibody in infants limits the interpretation of a positive antibody test result in this age group. Most of the consultants believed that passively transferred maternal HIV antibody could sometimes persist for up to 15 months. For this reason, two definitions for infection in children are needed: one for infants and children up to 15 months of age who have been exposed to their infected mothers perinatally, and another for older children with perinatal infection and for infants and children of all ages acquiring the virus through other means.

Infants and children under 15 months of age with perinatal infection—Infection in infants and children up to 15 months of age who were exposed to infected mothers in the perinatal period may be defined by one or more of the following: 1) the identification of the virus in blood or tissues, 2) the presence of HIV antibody as indicated by a repeatedly reactive screening test (e.g., enzyme immunoassay) plus a positive confirmatory test (e.g., Western blot, immunofluorescence assay) in an infant or child who has abnormal immunologic test results indicating both humoral and cellular immunodeficiency (increased immunoglobulin levels, depressed T4 [T-helper] absolute cell count, absolute lymphopenia, decreased T4/T8 ratio) and who meets the requirements of one or more of the subclasses listed under class P-2 (described below), or 3) the confirmation that a child's symptoms meet the previously published CDC case definition for pediatric AIDS (*1,2*).

The infection status of other perinatally exposed seropositive infants and children up to 15 months of age who lack one of the above immunologic or clinical criteria is indeterminate. These infants should be followed up for HIV-related illness, and they should be tested at regu-

TABLE 1. Summary of the definition of HIV infection in children

Infants and children under 15 months of age with perinatal infection

1) Virus in blood or tissues
   or
2) HIV antibody
   and
   evidence of both cellular and humoral immune deficiency
   and
   one or more categories in Class P-2
   or
3) Symptoms meeting CDC case definition for AIDS

Older children with perinatal infection and children with HIV infection acquired through other modes of transmission

1) Virus in blood or tissues
   or
2) HIV antibody
   or
3) Symptoms meeting CDC case definition for AIDS

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lar intervals for persistence of antibody to HIV. Infants and children who become seronegative, are virus-culture negative (if blood or tissue samples are cultured), and continue to have no clinical or laboratory-confirmed abnormalities associated with HIV infection are unlikely to be infected.

Older children with perinatal infection and children with HIV infection acquired through other modes of transmission—HIV infection in these children is defined by one or more of the following: 1) the identification of virus in blood or tissues, 2) the presence of HIV antibody (positive screening test plus confirmatory test) regardless of whether immunologic abnormalities or signs or symptoms are present, or 3) the confirmation that the child's symptoms meet the previously published CDC case definition for pediatric AIDS (*1,2*).

These definitions apply to children under 13 years of age. Persons 13 years of age and older should be classified according to the adult classification system (*3*).

CLASSIFICATION SYSTEM (Table 2)

Children fulfilling the definition of HIV infection discussed above may be classified into one of two mutually exclusive classes based on the presence or absence of clinical signs and symptoms (Table 2). Class Pediatric-1 (P-1) is further subcategorized on the basis of the presence or absence of immunologic abnormalities, whereas Class P-2 is subdivided by specific disease patterns. Once a child has signs and symptoms and is therefore classified in P-2, he or she should not be reassigned to class P-1 if signs and symptoms resolve.

Perinatally exposed infants and children whose infection status is indeterminate are classified into class P-0.

Class P-0. Indeterminate infection. Includes perinatally exposed infants and children up to 15 months of age who cannot be classified as definitely infected according to the above definition but who have antibody to HIV, indicating exposure to a mother who is infected.

Class P-1. Asymptomatic infection. Includes patients who meet one of the above defini-

TABLE 2. Summary of the classification of HIV infection in children under 13 years of age

Class P-0. Indeterminate infection

Class P-1. Asymptomatic infection

- Subclass A. Normal immune function
- Subclass B. Abnormal immune function
- Subclass C. Immune function not tested

Class P-2. Symptomatic infection

- Subclass A. Nonspecific findings
- Subclass B. Progressive neurologic disease
- Subclass C. Lymphoid interstitial pneumonitis
- Subclass D. Secondary infectious diseases
  - Category D-1. Specified secondary infectious diseases listed in the CDC surveillance definition for AIDS
  - Category D-2. Recurrent serious bacterial infections
  - Category D-3. Other specified secondary infectious diseases
- Subclass E. Secondary cancers
  - Category E-1. Specified secondary cancers listed in the CDC surveillance definition for AIDS
  - Category E-2. Other cancers possibly secondary to HIV infection
- Subclass F. Other diseases possibly due to HIV infection

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tions for HIV infection but who have had no previous signs or symptoms that would have led to classification in Class P-2.

These children may be subclassified on the basis of immunologic testing. This testing should include quantitative immunoglobulins, complete blood count with differential, and T-lymphocyte subset quantitation. Results of functional testing of lymphocytes (mitogens, such as pokeweed) may also be abnormal in HIV-infected children, but it is less specific in comparison with immunoglobulin levels and lymphocyte subset analysis, and it may be impractical.

Subclass A - Normal immune function. Includes children with no immune abnormalities associated with HIV infection.

Subclass B - Abnormal immune function. Includes children with one or more of the commonly observed immune abnormalities associated with HIV infection, such as hypergammaglobulinemia, T-helper (T4) lymphopenia, decreased T-helper/T-suppressor (T4/T8) ratio, and absolute lymphopenia. Other causes of these abnormalities must be excluded.

Subclass C - Not tested. Includes children for whom no or incomplete (see above) immunologic testing has been done.

Class P-2. Symptomatic infection. Includes patients meeting the above definitions for HIV infection and having signs and symptoms of infection. Other causes of these signs and symptoms should be excluded. Subclasses are defined based on the type of signs and symptoms that are present. Patients may be classified in more than one subclass.

Subclass A - Nonspecific findings. Includes children with two or more unexplained nonspecific findings persisting for more than 2 months, including fever, failure-to-thrive or weight loss of more than 10% of baseline, hepatomegaly, splenomegaly, generalized lymphadenopathy (lymph nodes measuring at least 0.5 cm present in two or more sites, with bilateral lymph nodes counting as one site), parotitis, and diarrhea (three or more loose stools per day) that is either persistent or recurrent (defined as two or more episodes of diarrhea accompanied by dehydration within a 2-month period).

Subclass B - Progressive neurologic disease. Includes children with one of more of the following progressive findings: 1) loss of developmental milestones or intellectual ability, 2) impaired brain growth (acquired microcephaly and/or brain atrophy demonstrated on computerized tomographic scan or magnetic resonance imaging scan), or 3) progressive symmetrical motor deficits manifested by two or more of these findings: paresis, abnormal tone, pathologic reflexes, ataxia, or gait disturbance.

Subclass C - Lymphoid interstitial pneumonitis. Includes children with a histologically confirmed pneumonitis characterized by diffuse interstitial and peribronchiolar infiltration of lymphocytes and plasma cells and without identifiable pathogens, or, in the absence of a histologic diagnosis, a chronic pneumonitis—characterized by bilateral reticulonodular interstitial infiltrates with or without hilar lymphadenopathy—present on chest X-ray for a period of at least 2 months and unresponsive to appropriate antimicrobial therapy. Other causes of interstitial infiltrates should be excluded, such as tuberculosis, *Pneumocystis carinii* pneumonia, cytomegalovirus infection, or other viral or parasitic infections.

Subclass D - Secondary infectious diseases. Includes children with a diagnosis of an infectious disease that occurs as a result of immune deficiency caused by infection with HIV.

Category D-1. Includes patients with secondary infectious disease due to one of the specified infectious diseases listed in the CDC surveillance definition for AIDS: *Pneumocystis carinii* pneumonia; chronic cryptosporidiosis; disseminated toxoplasmosis with onset after 1 month of age; extra-intestinal strongyloidiasis; chronic isosporiasis; candidiasis (esophageal, bronchial, or pulmonary); extrapulmonary cryptococco-

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sis; disseminated histoplasmosis; noncutaneous, extrapulmonary, or disseminated mycobacterial infection (any species other than leprae); cytomegalovirus infection with onset after 1 month of age; chronic mucocutaneous or disseminated herpes simplex virus infection with onset after 1 month of age; extrapulmonary or disseminated coccidioidomycosis; nocardiosis; and progressive multifocal leukoencephalopathy.

Category D-2. Includes patients with unexplained, recurrent, serious bacterial infections (two or more within a 2-year period) including sepsis, meningitis, pneumonia, abscess of an internal organ, and bone/joint infections.

Category D-3. Includes patients with other infectious diseases, including oral candidiasis persisting for 2 months or more, two or more episodes of herpes stomatitis within a year, or multidermatomal or disseminated herpes zoster infection.

Subclass E - Secondary cancers. Includes children with any cancer described below in categories E-1 and E-2.

Category E-1. Includes patients with the diagnosis of one or more kinds of cancer known to be associated with HIV infection as listed in the surveillance definition of AIDS and indicative of a defect in cell-mediated immunity: Kaposi's sarcoma, B-cell non-Hodgkin's lymphoma, or primary lymphoma of the brain.

Category E-2. Includes patients with the diagnosis of other malignancies possibly associated with HIV infection.

Subclass F - Other diseases. Includes children with other conditions possibly due to HIV infection not listed in the above subclasses, such as hepatitis, cardiopathy, nephropathy, hematologic disorders (anemia, thrombocytopenia), and dermatologic diseases.

Reported by: AIDS Program, Center for Infectious Diseases, CDC.

Editorial Note: This classification system is based on present knowledge and understanding of pediatric HIV infection and may need to be revised as new information becomes available. New diagnostic tests, particularly antigen detection tests and HIV-specific IgM tests, may lead to a better definition of HIV infection in infants and children. Information from several natural history studies currently under way may necessitate changes in the subclasses based on clinical signs and symptoms.

A definitive diagnosis of HIV infection in perinatally exposed infants and children under 15 months of age can be difficult. The infection status of these HIV-seropositive infants and children who are asymptomatic without immune abnormalities cannot be determined unless virus culture or other antigen-detection tests are positive. Negative virus cultures do not necessarily mean the child is not infected, since the sensitivity of the culture may be low. Decreasing antibody titers have been helpful in diagnosing other perinatal infections, such as toxoplasmosis and cytomegalovirus. However, the pattern of HIV-antibody production in infants is not well defined. At present, close follow-up of these children (Class P-0) for signs and symptoms indicative of HIV infection and/or persistence of HIV antibody is recommended.

The parents of children with HIV infection should be evaluated for HIV infection, particularly the mother. The child is often the first person in such families to become symptomatic. When HIV infection in a child is suspected, a careful history should be taken to elicit possible risk factors for the parents and the child. Appropriate laboratory tests, including HIV serology, should be offered. If the mother is seropositive, other children should be evaluated regarding their risk of perinatally acquired infection. Intrafamilial transmission, other than perinatal or sexual, is extremely unlikely. Identification of other infected family members allows for appropriate medical care and prevention of transmission to sexual partners and future children (*11,12*).

HIV Infection – Continued

The nonspecific term AIDS-related complex has been widely used to describe symptomatic HIV-infected children who do not meet the CDC case definition for AIDS. This classification system categorizes these children more specifically under Class P-2.

The development and publication of this classification system does not imply any immediate change in the definition of pediatric AIDS used by CDC for reporting purposes (*1,2*). Changes in this definition require approval by state and local health departments. However, changes in the definition for reporting cases have been proposed by CDC and are awaiting state and local approval.

Written comments are encouraged. They should be mailed to the AIDS Program, Center for Infectious Diseases, Centers for Disease Control, Atlanta, GA 30333.

References

1. CDC. Update: acquired immunodeficiency syndrome (AIDS)—United States. MMWR 1984;32:688-91.
2. CDC. Revision of the case definition of acquired immunodeficiency syndrome for national reporting—United States. MMWR 1985;34:373-5.

(Continued on page 235)

TABLE I. Summary – cases specified notifiable diseases, United States

Disease	15th Week Ending			Cumulative, 15th Week Ending		
	Apr. 18, 1987	Apr. 12, 1986	Median 1982-1986	Apr. 18, 1987	Apr. 12 1986	Median 1982-1986
Acquired immunodeficiency Syndrome (AIDS)	518	376	N	5,485	3,578	N
Aseptic meningitis	80	82	71	1,262	1,241	1,174
Encephalitis: Primary (arthropod-borne & unspec)	15	17	19	214	251	256
Post-infectious	3	2	2	13	30	27
Gonorrhea: Civilian	12,921	16,617	16,047	225,611	239,771	239,771
Military	463	234	341	4,989	4,487	6,174
Hepatitis: Type A	419	409	409	7,067	6,495	6,495
Type B	454	522	482	7,064	7,137	7,033
Non A, Non B	64	55	N	857	960	N
Unspecified	68	96	122	984	1,431	1,476
Legionellosis	24	9	N	196	172	N
Leprosy	3	7	6	63	79	77
Malaria	7	13	15	185	205	198
Measles: Total*	100	203	81	949	1,811	723
Indigenous	99	199	N	835	1,758	N
Imported	1	4	N	114	49	N
Meningococcal infections: Total	40	69	67	1,054	979	991
Civilian	40	69	67	1,053	977	980
Military	-	-	-	1	2	2
Mumps	358	151	101	5,346	1,023	1,206
Pertussis	26	78	43	516	687	525
Rubella (German measles)	12	11	11	95	144	156
Syphilis (Primary & Secondary): Civilian	517	428	485	9,357	7,315	8,152
Military	4	10	10	61	72	96
Toxic Shock syndrome	10	8	N	90	92	N
Tuberculosis	329	375	433	5,539	5,430	5,726
Tularemia	2	2	2	23	19	25
Typhoid Fever	11	5	7	70	85	90
Typhus fever, tick-borne (RMSF)	2	3	4	12	20	20
Rabies, animal	118	139	155	1,277	1,502	1,502

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1987		Cum. 1987
Anthrax	-	Leptospirosis	7
Botulism: Foodborne	1	Plague	2
Infant (Calif. 2)	18	Poliomyelitis, Paralytic	-
Other	-	Psittacosis (Md. 1)	19
Brucellosis (Mich. 1; Calif. 1)	22	Rabies, human	-
Cholera	-	Tetanus (Oreg. 1)	9
Congenital rubella syndrome	2	Trichinosis	11
Congenital syphilis, ages < 1 year	-	Typhus fever, flea-borne (endemic, murine)	5
Diphtheria	1		

*One of the 100 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending April 18, 1987 and April 12, 1986 (15th Week)

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1987	1987	Cum. 1987	Cum. 1987	Cum. 1987	Cum. 1986	1987	1987	1987	1987	1987	Cum. 1987
UNITED STATES	5,465	80	214	13	225,611	239,771	419	454	64	68	24	63
NEW ENGLAND	215	3	9	1	7,990	5,239	18	31	8	3	1	4
Maine	10	-	1	-	249	278	-	2	-	-	-	-
N H	6	-	-	-	133	148	3	4	3	-	-	2
Vt	4	-	2	-	60	83	-	-	1	-	-	-
Mass	131	2	2	-	2,985	2,240	9	19	3	1	1	2
R I	18	-	3	1	635	487	2	-	-	1	-	-
Conn	47	1	1	-	3,928	2,003	4	6	1	1	-	-
MID ATLANTIC	1,549	11	26	-	37,466	41,852	23	55	5	21	-	5
Upstate N Y	223	5	15	-	4,787	4,519	12	13	2	1	-	-
N Y City	885	-	4	-	20,300	24,599	6	36	1	20	-	5
N J	334	6	2	-	4,660	5,721	5	6	2	-	-	-
Pa	107	-	5	-	7,719	7,013	-	-	-	-	-	-
E N CENTRAL	332	11	55	-	25,900	33,161	21	33	4	5	11	1
Ohio	70	-	22	-	6,898	7,715	1	4	1	-	2	1
Ind	31	1	3	-	2,734	3,734	1	2	-	-	6	-
Ill	152	1	8	-	3,416	8,409	10	10	1	1	-	-
Mich	46	9	20	-	10,390	9,706	9	17	2	4	1	-
Wis	33	-	2	-	2,462	3,597	-	-	-	-	-	-
W N CENTRAL	125	2	13	-	9,340	10,393	24	13	2	3	2	-
Minn	30	1	7	-	1,555	1,561	7	-	2	-	-	-
Iowa	5	-	1	-	921	1,043	1	3	-	-	-	-
Mo	67	-	-	-	4,740	5,159	1	6	-	1	-	-
N Dak	1	-	-	-	86	101	-	-	-	-	-	-
S Dak	1	1	-	-	182	209	-	-	-	-	1	-
Nebr	6	-	3	-	542	696	6	2	-	-	-	-
Kans	15	-	2	-	1,314	1,624	7	2	-	2	1	-
S ATLANTIC	912	21	33	5	61,656	59,668	39	81	5	1	4	4
Del	8	-	1	-	884	965	1	1	1	-	-	-
Md	110	1	3	1	7,854	7,214	2	7	1	-	2	2
D C	118	-	-	-	4,074	4,480	-	-	-	-	-	-
Va	64	8	14	1	4,836	5,068	9	7	-	-	-	-
W Va	3	3	5	-	492	718	2	1	-	-	-	-
N C	37	-	8	-	9,131	8,949	2	8	2	-	1	-
S C	24	-	-	-	5,292	5,326	-	8	-	-	-	1
Ga	142	3	-	-	10,435	9,359	6	23	1	1	-	-
Fla	406	6	2	3	18,658	16,587	17	26	-	-	1	1
E S CENTRAL	63	2	12	3	16,963	19,564	3	28	1	-	-	-
Ky	17	-	4	1	1,732	2,318	1	10	1	-	-	-
Tenn	2	-	3	-	5,783	7,490	-	10	-	-	-	-
Ala	37	2	5	-	5,518	5,605	2	8	-	-	-	-
Miss	7	-	-	2	3,930	4,151	-	-	-	-	-	-
W S CENTRAL	470	8	20	1	25,124	28,879	42	61	8	6	2	4
Ark	12	-	-	1	2,470	2,666	3	5	-	-	-	-
La	79	1	3	-	5,280	5,040	3	38	-	-	-	-
Okla	22	-	8	-	2,848	3,334	8	4	-	-	-	-
Tex	357	7	9	-	14,526	17,839	28	14	8	6	2	4
MOUNTAIN	135	5	7	1	6,262	7,238	66	35	5	4	2	-
Mont	2	-	-	-	153	184	5	1	-	-	-	-
Idaho	3	-	-	-	214	230	9	1	-	-	-	-
Wyo	2	-	-	-	98	172	-	-	-	-	-	-
Colo	66	1	1	-	1,267	1,929	8	5	1	2	1	-
N Mex	12	-	1	-	663	780	10	7	2	-	-	-
Ariz	21	3	5	1	2,305	2,358	28	15	2	2	1	-
Utah	8	1	-	-	218	308	6	2	-	-	-	-
Nev	21	-	-	-	1,344	1,279	-	4	-	-	-	-
PACIFIC	1,664	17	39	2	34,910	33,779	183	117	28	25	2	45
Wash	69	2	6	-	2,381	2,667	51	33	13	7	-	2
Oreg	37	-	-	-	1,271	1,316	28	13	3	-	-	-
Calif	1,531	15	33	2	30,363	28,501	94	66	9	18	2	37
Alaska	3	-	-	-	579	926	10	5	1	-	-	-
Hawaii	24	-	-	-	316	369	-	-	-	-	-	6
Guam	-	-	-	-	60	28	-	1	-	-	-	-
P R	16	-	-	1	651	651	-	2	-	-	-	-
V I	-	-	-	-	61	66	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	158	42	-	-	-	-	-	38
Amer. Samoa	-	-	-	-	30	12	-	-	-	-	-	-

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending April 18, 1987 and April 12, 1986 (15th Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	1987	Cum. 1987	Cum. 1986
UNITED STATES	185	99	835	1	114	1,811	1,054	358	5,346	26	516	687	12	95	144
NEW ENGLAND	14	6	41	-	18	10	104	1	13	1	14	39	-	-	1
Maine	-	3	3	-	-	-	6	-	-	-	-	2	-	-	-
N.H.	-	3	33	-	11	-	11	-	6	-	1	15	-	-	1
Vt.	-	-	1	-	5	-	6	-	2	-	3	1	-	-	-
Mass.	7	-	-	-	2	9	53	-	1	-	3	9	-	-	-
R.I.	4	-	-	-	-	1	9	1	1	-	-	1	-	-	-
Conn.	3	-	4	-	-	-	19	-	3	1	7	11	-	-	-
MID. ATLANTIC	10	1	120	-	35	618	69	4	79	3	74	74	-	3	23
Upstate N.Y.	5	-	8	-	8	4	46	2	29	3	57	48	-	1	15
N.Y. City	2	-	103	-	8	91	7	-	-	-	-	3	-	1	5
N.J.	1	1	6	-	2	523	-	-	24	-	4	5	-	1	3
Pa.	2	-	3	-	17	-	16	2	26	-	13	18	-	-	-
E.N. CENTRAL	4	10	78	-	13	356	133	184	3,104	6	84	149	1	17	8
Ohio	3	-	-	-	4	-	45	9	41	4	23	62	-	-	-
Ind.	-	-	-	-	-	-	16	-	346	-	-	16	-	-	-
Ill.	1	10	49	-	9	200	22	155	1,673	1	4	19	1	16	5
Mich.	-	-	23	-	-	-	42	19	449	1	20	14	-	1	2
Wis.	-	-	6	-	-	152	8	1	595	-	17	38	-	-	1
W.N. CENTRAL	4	3	18	-	1	81	53	99	597	-	33	36	1	1	5
Minn.	3	-	-	-	-	1	16	81	381	-	7	18	-	-	-
Iowa	-	-	-	-	-	-	3	16	169	-	3	5	1	1	-
Mo.	1	3	18	-	1	1	14	1	8	-	13	4	-	-	1
N. Dak.	-	-	-	-	-	1	1	-	-	-	1	2	-	-	-
S. Dak.	-	-	-	-	-	-	1	-	15	-	2	-	-	-	-
Nebr.	-	-	-	-	-	-	1	1	2	-	-	1	-	-	-
Kans.	-	-	-	-	-	78	17	-	22	-	7	6	-	-	4
S. ATLANTIC	33	4	26	-	-	253	199	3	62	5	123	222	-	8	1
Del.	1	-	-	-	-	-	4	-	-	-	-	109	-	-	-
Md.	7	-	-	-	-	11	16	-	8	-	1	32	-	1	-
D.C.	5	-	-	-	-	-	4	-	-	-	-	-	-	-	-
Va.	5	-	-	-	-	-	35	1	8	1	32	9	-	1	-
W. Va.	-	-	-	-	-	2	-	1	14	1	24	3	-	-	-
N.C.	3	-	-	-	-	-	23	-	2	2	51	14	-	-	-
S.C.	2	-	-	-	-	227	18	-	4	-	-	2	-	-	-
Ga.	2	-	-	-	-	1	34	-	6	1	12	40	-	1	-
Fla.	8	4	26	-	-	12	55	1	20	-	3	13	-	5	1
E.S. CENTRAL	1	-	-	-	-	1	57	38	791	-	7	15	-	2	1
Ky.	-	-	-	-	-	-	9	-	184	-	1	1	-	2	1
Tenn.	-	-	-	-	-	1	22	37	597	-	1	5	-	-	-
Ala.	-	-	-	-	-	-	22	1	10	-	3	9	-	-	-
Miss.	1	-	-	-	-	-	4	-	-	-	2	-	-	-	-
W.S. CENTRAL	9	62	67	-	1	299	78	16	463	-	36	24	1	1	30
Ark.	1	-	-	-	-	265	5	1	202	-	2	1	1	1	-
La.	-	-	-	-	-	-	9	6	158	-	6	3	-	-	-
Okla.	3	-	-	-	1	2	13	N	N	-	28	20	-	-	-
Tex.	5	62	67	-	-	32	51	9	103	-	-	-	-	-	30
MOUNTAIN	7	4	129	-	11	53	37	4	99	-	41	69	-	6	-
Mont.	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-
Idaho	1	-	-	-	-	-	3	-	2	-	11	15	-	1	-
Wyo.	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-
Colo.	1	-	-	-	-	3	15	-	8	-	17	14	-	-	-
N. Mex.	-	4	128	-	9	16	3	N	N	-	1	8	-	-	-
Ariz.	3	-	1	-	1	33	14	3	82	-	8	23	-	-	-
Utah	-	-	-	-	-	-	-	-	5	-	1	8	-	4	-
Nev.	2	-	-	-	-	-	2	1	2	-	-	-	-	-	-
PACIFIC	103	9	356	1	35	140	334	9	138	11	124	59	9	57	75
Wash.	6	-	-	- †	-	29	46	4	24	1	21	25	-	-	1
Oreg.	2	-	1	1 †	27	2	14	N	N	-	13	3	-	1	-
Calif.	93	9	355	-	6	90	270	3	101	4	58	29	8	53	73
Alaska	2	-	-	-	-	-	2	-	3	-	2	1	-	-	-
Hawaii	-	-	-	-	2	19	2	2	10	6	32	1	1	3	1
Guam	-	-	2	-	-	3	3	-	4	-	-	-	-	-	2
P.R.	-	62	304	-	-	4	2	-	1	-	11	3	-	1	-
V.I.	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
Pac. Trust Ter.	-	-	-	-	-	-	1	-	2	-	-	-	-	1	-
Amer. Samoa	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending April 18, 1987 and April 12, 1986 (15th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum 1987	Cum 1986	1987	Cum 1987	Cum 1986	Cum 1987	Cum 1987	Cum 1987	Cum 1987
UNITED STATES	9,357	7,315	10	5,538	5,430	23	70	12	1,277
NEW ENGLAND	134	140	-	144	173	-	4	-	-
Maine	1	10	-	10	18	-	-	-	-
N H	1	6	-	5	9	-	-	-	-
Vt	1	6	-	4	7	-	-	-	-
Mass	72	67	-	58	82	-	3	-	-
R I	2	9	-	16	11	-	-	-	-
Conn	57	43	-	51	46	-	1	-	-
MID ATLANTIC	1,619	1,003	-	1,016	1,101	-	7	-	112
Upstate N Y	63	51	-	171	181	-	2	-	9
N Y City	1,127	570	-	501	526	-	-	-	-
N J	187	196	-	155	193	-	5	-	1
Pa	242	186	-	189	201	-	-	-	102
E N CENTRAL	154	275	3	678	680	1	10	-	33
Ohio	29	34	1	137	102	1	5	-	-
Ind	15	40	-	58	86	-	1	-	4
Ill	52	142	-	272	302	-	1	-	17
Mich	43	43	2	189	151	-	2	-	-
Wis	15	16	-	22	39	-	1	-	12
W N CENTRAL	39	67	1	156	154	5	3	-	285
Minn	5	8	-	44	36	-	1	-	65
Iowa	7	5	-	8	11	2	-	-	86
Mo	20	38	-	76	84	3	2	-	18
N Dak	-	2	-	1	2	-	-	-	29
S Dak	3	1	1	6	5	-	-	-	47
Nebr	3	8	-	11	4	-	-	-	9
Kans	1	5	-	10	12	-	-	-	13
S ATLANTIC	3,196	2,151	1	1,118	1,080	3	5	4	344
Del	27	10	-	11	14	1	-	-	-
Md	182	142	-	97	77	-	-	-	93
D C	98	105	-	34	42	-	-	-	19
Va	78	139	-	102	102	1	-	-	120
W Va	4	3	-	35	40	-	1	-	19
N C	180	155	-	112	121	1	1	1	-
S C	226	201	1	106	128	-	-	3	16
Ga	477	383	-	157	132	-	-	-	57
Fla	1,923	1,013	-	485	404	-	3	-	20
E S CENTRAL	558	486	-	446	493	2	1	3	108
Ky	4	25	-	117	133	1	-	-	57
Tenn	280	202	-	113	136	-	1	2	30
Ala	160	163	-	157	162	-	-	-	21
Miss	114	96	-	59	62	1	-	1	-
W S CENTRAL	1,300	1,586	1	600	656	7	3	4	182
Ark	63	77	-	57	83	2	-	-	55
La	227	247	-	80	125	-	-	-	3
Okla	43	47	-	69	56	5	1	4	5
Tex	967	1,215	1	394	392	-	2	-	119
MOUNTAIN	219	189	2	134	111	5	3	-	102
Mont	7	2	-	8	5	-	-	-	48
Idaho	1	1	-	16	5	1	-	-	-
Wyo	22	-	-	-	-	-	-	-	29
Colo	29	61	-	-	5	1	-	-	-
N Mex	15	22	-	25	25	-	3	-	-
Ariz	102	80	2	76	54	2	-	-	25
Utah	5	3	-	1	4	1	-	-	-
Nev	38	20	-	8	13	-	-	-	-
PACIFIC	2,139	1,418	2	1,246	1,002	-	34	1	131
Wash	20	38	-	54	55	-	-	-	-
Oreg	66	28	-	39	36	-	-	-	-
Calif	2,047	1,337	2	1,076	844	-	33	1	130
Alaska	2	-	-	18	17	-	-	-	1
Hawaii	4	15	-	59	50	-	1	-	-
Guam	1	1	-	4	-	-	-	-	-
P R	292	246	-	76	76	-	-	-	21
V I	3	-	-	1	1	-	-	-	-
Pac. Trust Terr	83	45	-	51	7	-	8	-	-
Amer Samoa	2	-	-	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending April 18, 1987 (15th Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	669	481	121	37	12	18	61
Boston, Mass.	181	120	32	12	6	11	17
Bridgeport, Conn.	37	29	7	1	-	-	2
Cambridge, Mass.	42	38	4	2	-	-	6
Fall River, Mass.	23	19	4	-	-	-	1
Hartford, Conn.	41	33	8	-	-	-	-
Lowell, Mass.	35	26	8	1	-	-	4
Lynn, Mass.	13	9	3	1	-	-	2
New Bedford, Mass.	33	30	2	1	-	-	4
New Haven, Conn.	45	28	10	4	3	-	2
Providence, R.I.	56	38	7	7	-	4	5
Somerville, Mass.	14	10	4	-	-	-	2
Springfield, Mass.	49	29	14	4	1	1	4
Waterbury, Conn.	29	22	5	1	1	-	1
Worcester, Mass.	71	52	13	3	1	2	11
MID ATLANTIC	2,628	1,748	532	247	48	53	114
Albany, N.Y.	57	38	14	4	-	1	1
Allentown, Pa.	46	36	8	2	-	-	3
Buffalo, N.Y.	102	74	17	8	1	2	7
Camden, N.J.	26	15	7	2	2	-	1
Elizabeth, N.J.	14	9	2	3	-	-	1
Erie, Pa.†	51	39	10	1	-	1	4
Jersey City, N.J. §	43	28	9	5	-	1	1
N.Y. City, N.Y.	1,278	808	273	152	26	19	47
Newark, N.J.	91	35	24	21	7	4	3
Paterson, N.J.	27	18	6	2	-	1	1
Philadelphia, Pa.	404	301	67	20	6	10	16
Pittsburgh, Pa.†	79	55	21	2	1	-	6
Reading, Pa.	31	23	7	1	-	-	1
Rochester, N.Y.	143	102	23	10	3	5	7
Schenectady, N.Y.	30	26	3	1	-	-	1
Scranton, Pa.†	27	23	3	-	-	1	1
Syracuse, N.Y.	95	65	20	2	2	6	4
Trenton, N.J.	37	22	8	5	-	2	2
Utica, N.Y.	13	6	6	1	-	-	3
Yonkers, N.Y.	34	25	4	5	-	-	4
E.N. CENTRAL	2,255	1,492	478	155	50	80	71
Akron, Ohio	41	28	9	2	1	1	-
Canton, Ohio	37	26	9	2	-	-	2
Chicago, Ill.§	564	382	125	45	10	22	16
Cincinnati, Ohio	132	92	21	9	5	5	11
Cleveland, Ohio	156	95	38	12	5	6	1
Columbus, Ohio	175	108	48	10	5	4	2
Dayton, Ohio	109	76	25	3	-	5	-
Detroit, Mich.	288	179	60	28	8	13	7
Evansville, Ind.	44	29	10	5	-	-	1
Fort Wayne, Ind.	39	25	12	2	-	-	-
Gary, Ind.	17	8	3	2	2	2	1
Grand Rapids, Mich.	87	65	13	4	2	3	6
Indianapolis, Ind.	156	94	33	14	5	10	3
Madison, Wis.	38	31	4	2	-	1	2
Milwaukee, Wis.	120	85	25	5	-	5	-
Peoria, Ill.	41	30	9	1	1	-	2
Rockford, Ill.	41	33	6	1	1	-	5
South Bend, Ind.	36	24	6	1	4	1	5
Toledo, Ohio	84	61	17	4	1	1	6
Youngstown, Ohio	50	41	5	3	-	1	1
W.N. CENTRAL	901	614	174	47	30	36	63
Des Moines, Iowa	84	62	17	1	3	1	4
Duluth, Minn.	39	23	10	1	1	4	3
Kansas City, Kans.	30	20	2	3	4	1	1
Kansas City, Mo.	123	84	20	11	2	6	17
Lincoln, Nebr.	37	31	5	-	-	1	2
Minneapolis, Minn.	156	121	24	3	3	5	13
Omaha, Nebr.	98	67	20	7	1	3	12
St. Louis, Mo.	166	94	47	10	7	8	7
St. Paul, Minn.	82	57	12	8	4	1	1
Wichita, Kans.	86	55	17	3	5	6	3
S. ATLANTIC	1,196	739	263	101	46	47	58
Atlanta, Ga.	162	97	36	20	8	1	1
Baltimore, Md.	201	128	38	19	6	10	9
Charlotte, N.C.	97	64	20	3	5	5	5
Jacksonville, Fla.	147	98	38	6	4	1	8
Miami, Fla.	94	55	18	8	6	7	1
Norfolk, Va.	52	23	15	6	3	5	3
Richmond, Va.	100	53	35	8	1	3	11
Savannah, Ga.	51	29	14	4	2	2	7
St. Petersburg, Fla.	87	73	10	1	1	2	5
Tampa, Fla.	85	56	15	8	3	3	6
Washington, D.C.	94	41	21	17	7	8	2
Wilmington, Del.	26	22	3	1	-	-	-
E.S. CENTRAL	771	499	185	42	26	19	43
Birmingham, Ala.	116	84	21	4	4	3	5
Chattanooga, Tenn.	61	34	18	7	1	1	4
Knoxville, Tenn.	78	49	23	2	1	3	7
Louisville, Ky.	79	54	17	6	1	1	2
Memphis, Tenn.	143	94	37	6	5	1	15
Mobile, Ala.	101	63	26	6	2	4	4
Montgomery, Ala.	61	39	13	5	3	1	1
Nashville, Tenn.	132	82	30	6	9	5	5
W.S. CENTRAL	1,288	798	276	110	39	41	60
Austin, Tex.	82	38	15	6	1	2	10
Baton Rouge, La.	38	25	6	4	2	1	5
Corpus Christi, Tex.	34	21	7	3	1	2	-
Dallas, Tex.	210	128	50	23	4	7	9
El Paso, Tex.	71	42	13	12	2	2	5
Fort Worth, Tex.	102	64	19	11	5	3	5
Houston, Tex.§	308	176	74	34	13	11	7
Little Rock, Ark.	96	65	16	4	4	5	8
New Orleans, La.	73	48	17	4	2	2	-
San Antonio, Tex.	187	131	44	4	3	5	9
Shreveport, La.	31	25	5	-	1	-	-
Tulsa, Okla.	56	37	12	5	1	1	2
MOUNTAIN	723	456	153	63	30	18	36
Albuquerque, N.Mex.	96	55	14	11	13	3	5
Colo. Springs, Colo.	46	26	12	4	1	2	6
Denver, Colo.	132	94	28	8	1	1	8
Las Vegas, Nev.	96	61	24	9	2	-	4
Ogden, Utah	26	15	4	3	2	2	1
Phoenix, Ariz.	152	91	33	18	2	8	2
Pueblo, Colo.	23	17	2	1	-	-	1
Salt Lake City, Utah	47	23	10	5	8	1	1
Tucson, Ariz.	105	74	25	4	1	1	8
PACIFIC	1,951	1,308	337	171	72	58	132
Berkeley, Calif.	15	11	-	2	-	2	-
Fresno, Calif.	94	70	16	3	4	1	6
Glendale, Calif.	18	16	2	-	-	-	3
Honolulu, Hawaii	65	46	5	8	2	4	7
Long Beach, Calif.	82	58	17	4	3	-	9
Los Angeles, Calif.	478	314	79	54	19	7	22
Oakland, Calif.	92	62	16	10	1	3	5
Pasadena, Calif.	43	26	10	3	2	3	4
Portland, Oreg.	130	85	24	8	4	9	6
Sacramento, Calif.	146	87	32	14	7	6	14
San Diego, Calif.	175	125	24	17	6	3	24
San Francisco, Calif.	141	85	30	21	3	2	4
San Jose, Calif.	184	128	28	8	10	10	16
Seattle, Wash.	148	103	22	10	8	5	4
Spokane, Wash.	81	51	18	8	3	3	3
Tacoma, Wash.	59	42	14	3	-	-	5
TOTAL	12,362††	8,135	2,521	973	353	370	638

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

HIV Infection — Continued

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TABLE V. Estimated years of potential life lost before age 65 and cause-specific mortality, by cause of death — United States, 1985

Cause of mortality (Ninth Revision ICD)	YPLL for persons dying in 1985*	Cause-specific mortality, 1985† (rate/100,000)
ALL CAUSES (Total)	11,844,475	874.8
Unintentional Injuries§ (E800-E949)	2,235,064	38.6
Malignant neoplasms (140-208)	1,813,245	191.7
Diseases of the heart (390-398,402,404-429)	1,600,265	325.0
Suicide, homicide (E950-E978)	1,241,688	20.1
Congenital anomalies (740-759)	694,715	5.5
Prematurity¶ (765, 769)	444,931	2.9
Sudden infant death syndrome (798)	313,389	3.0
Cerebrovascular disease (430-438)	253,044	64.0
Chronic liver diseases and cirrhosis (571)	235,629	11.2
Pneumonia and influenza (480-487)	168,949	27.9
Acquired Immunodeficiency Syndrome (AIDS)**	152,595	2.3
Chronic obstructive pulmonary diseases (490-496)	129,815	31.2
Diabetes mellitus (250)	128,229	16.2

*For details of calculation, see footnotes to Table V, *MMWR* 1987;36:56.

†Cause-specific mortality rates as reported in the National Center for Health Statistics *Monthly Vital Statistics Report* are compiled from a 10% sample of all deaths.

§Equivalent to accidents and adverse effects.

¶Category derived from disorders relating to short gestation and respiratory distress syndrome.

**Reflects CDC surveillance data. No ICD code has been assigned for AIDS.

HIV Infection — Continued

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Perspectives in Disease Prevention and Health Promotion

Premature Mortality Due to Sudden Infant Death Syndrome — United States, 1980-1986

Years of potential life lost before age 65 (YPLL) highlights the mortality trends in younger age groups, especially infants (<1 year of age). In 1986, sudden infant death syndrome (SIDS) accounted for an estimated 336,884 YPLL* and ranked as the eighth leading cause of YPLL. In comparison, in 1984 and 1985, SIDS accounted for 316,909 and 313,386 YPLL, respectively, and ranked as the seventh leading cause of YPLL.

In Table V, deaths are attributed to SIDS if the underlying cause of death is classified as category 798.0 according to the International Classification of Diseases, 9th Revision (ICD-9), and age at death was <1 year. In the analysis reported here, the numbers and underlying causes of death are from the National Center for Health Statistics (NCHS) national mortality computer tapes. YPLL was calculated by averaging age at death for each subgroup† during both the neonatal period (<28 days) and the postneonatal period (28 days to <1 year), for 1980-1983, the latest year for which data are available (Table 3) (*1,2*).

For 1980-1983, the average annual YPLL due to all causes of infant death was 2,787,465; 1,861,691 YPLL (66.8%) occurred because of deaths in the neonatal period, and 925,774 YPLL (33.2%) occurred because of deaths in the postneonatal period (*2*). During 1980-1983, 12.4% of the YPLL in the first year of life and 34.5% of the YPLL in the postneonatal period were due to SIDS.

*A projected estimate based on data from the National Center for Health Statistics *Monthly Vital Statistics Report* (compiled from a 10% sample of all deaths) through November 1986.
†YPLL = T (65-(A-/365.25)), where T = total number of infants deaths for subgroup (year, race, sex, and cause of death) and A = average age at death in days for that subgroup.

SIDS – Continued

The average annual YPLL due to SIDS during this 4-year period was 346,158. The average annual race- and sex-specific YPLL was 144,882 for white males; 92,057 for white females; 55,158 for black males; 43,702 for black females; 5,809 for other males; and 4,548 for other females. The male:female ratio for white infants was 1.6:1, compared with 1.3:1 for black infants and 1.3:1 for other infants. There were no discernible trends during this 4-year period (Table 3).

YPLL depends directly on the number of births in any given group. The average annual YPLL due to SIDS per 1,000 live births was 96.8 for white males, 65.0 for white females, 184.6 for black males, 150.6 for black females, 82.3 for other males, and 67.7 for other females.

Reported by: Pregnancy Epidemiology Br, Research and Statistics Br, Div of Reproductive Health, Center for Health Promotion and Education, CDC.

Editorial Note: SIDS and other causes of infant death consistently rank low in mortality statistics because these statistics are dominated by the underlying disease processes of the elderly. YPLL, which does not count deaths of persons 65 years or older, is an alternative method for determining the impact of particular health problems. It can quantitate these problems and thus enable public health officials to set priorities. The use of YPLL demonstrates the importance of SIDS because deaths early in life are weighted heavily in the calculation of YPLL. For comparative purposes, the total deaths attributable to SIDS for the years 1980-1983 were 5,510, 5,295, 5,278, and 5,305, respectively.

The most widely accepted definition of SIDS, proposed by Beckwith in 1968, is "the sudden death of any infant or young child, which is unexpected by history, and in which a thorough postmortem examination fails to demonstrate an adequate cause of death" (*3*). However, in 12% of SIDS deaths reported from 1980-1983, no autopsy was performed. Also, only children <1 year of age were included for the calculation of YPLL. Deaths that would be classified as SIDS but that occur in children ≥ 1 year of age are classified as instan-

TABLE 3. Years of potential life lost before age 65 due to sudden infant death syndrome, by year, race, and sex — United States, 1980-1983

Race	Sex	Year			
		1980	1981	1982	1983
White	Male	147,076	147,799	144,043	140,612
	Female	93,677	90,182	91,079	93,289
	Total	240,754	237,981	235,122	233,901
Black	Male	58,841	52,186	53,993	55,614
	Female	48,042	42,472	41,635	42,659
	Total	106,884	94,658	95,628	98,273
Other	Male	5,112	6,018	6,344	5,762
	Female	3,950	4,141	4,598	5,504
	Total	9,062	10,159	10,942	11,266
Total*	Male	211,030	206,003	204,380	201,988
	Female	145,670	136,795	137,312	141,452
	Total	356,700	342,798	341,692	343,440

*Sums of values in table may not equal totals and subtotals because of rounding.

SIDS – Continued

The male excess in YPLL due to SIDS per 1,000 live births (49% for whites, 23% for blacks, and 22% for other races) reflects the unexplained increased risk of death from SIDS in male infants (*4*). This may reflect the increased incidence in mortality and infectious disease morbidity in male infants (*5*). The largest percentage of excess in YPLL in male infants per 1,000 live births occurs in whites because the greatest relative risk of death from SIDS due to gender is in whites.

The rate of YPLL due to SIDS per 1,000 live births for blacks is 1.7 times that for whites. This is related, at least in part, to the increased incidence of low birthweight (*6*), teenage fertility (*7*), and lower socioeconomic conditions among blacks (*8*), because each of these risk factors independently increases the risk of death from SIDS (*9-13*). Closing the black-white gap depends in part on the reduction of these three risks.

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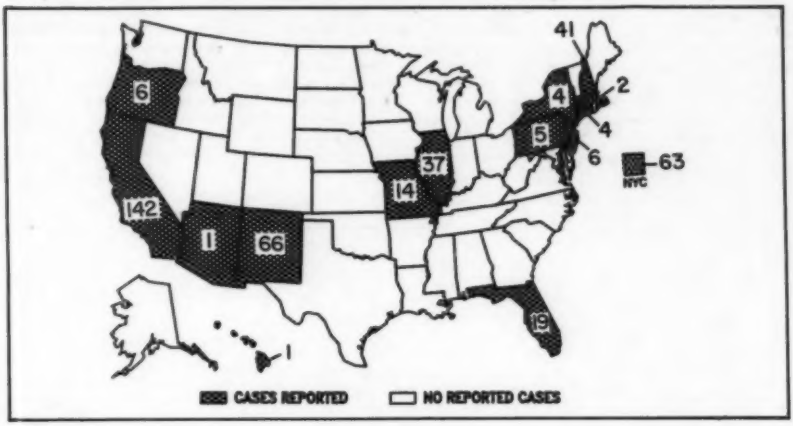
FIGURE I. Reported measles cases — United States, weeks 11-14, 1987



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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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